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Feed Outlook: April 2023

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U.S. Corn Use Is Revised Down for 2022/23

The outlook for 2022/23 U.S. corn markets in the April *World Agricultural Supply and Demand Estimates (WASDE)* report is for reduced corn use and imports from the March report. U.S. corn use is projected 10 million bushels lower to 13,805 million bushels, on lower industrial use associated with expectations for reduced utilization of starch and glucose/dextrose. Corn ending stocks for 2022/23 stay at 1.342 billion bushels, due to a 10-million-bushel reduction of the corn imports forecast, down to 40 million bushels.

Foreign corn production is reduced this month, led by *Argentina* and the *European Union*. Global coarse grain exports are revised lower this month as well, with reduced corn exports for *Argentina* and *Mexico* partially offset by increases for *Ukraine* and *Russia*. Barley trade is projected slightly lower, with increases for *Jordan* and the *European Union* offset by declines for *Saudi Arabia* and the *United Arab Emirates* (in addition to a number of offsetting fractional changes for other countries). Global coarse grain use is forecast lower this month—driven by a decrease in corn, sorghum, and barley use.

Domestic Outlook

Corn Use Is Down Slightly on Lower FSI

U.S. projected corn disappearance is lowered 10 million bushels this month to 13,805 million bushels. Food, seed, and industrial (FSI) use is dropped 10 million bushels to 6,680 million bushels, on lower corn use for the starch and glucose/dextrose categories. Both industrial use categories are dropped 5 million bushels, due to lower estimated 2nd quarter corn disappearance based on the latest USDA, National Agricultural Statistics Service (NASS) *Grain Stocks* report (figure 1). Corn use for ethanol came in at 2,549 million bushels over the first half of the marketing year, down from 2,609 million last year. Projected ethanol use remains at 5,250 million bushels. To reach the current forecast, corn use for ethanol needs to be 2 percent higher than last year over the second half of the marketing year. Recent strengthening of gasoline demand and positive ethanol plant margins provide support for the current forecast. Projected corn ending stocks for 2022/23 remain at 1,342 million bushels, as a slow import pace drops the corn import forecast by 10 million bushels to 40 million. A recent uptick in corn sales and export pace, relative to earlier months, keeps the corn export forecast unchanged at 1,850 million bushels.

Billion bushels December 1 March 1 12 6 2005 2009 2013 2005 2009 2013 June 1 September 1 12 10 2005 2009 2013 2017 2021 2005 2009 2013 2017 2021 Marketing year Off-farm inventories On-farm inventories Source: USDA, National Agricultural Statistics Service.

Figure 1
U.S. corn inventories, quarterly, on-farm versus off-farm

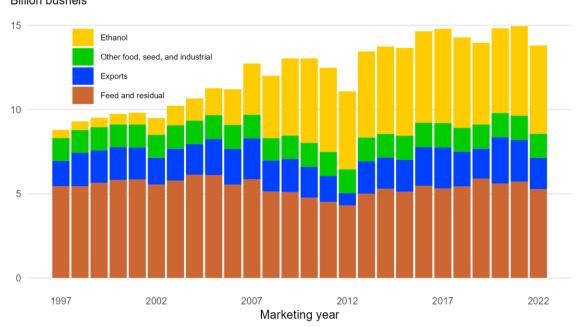
Feed and Residual Is on Track for 2022/23

On March 31, USDA, NASS released its latest *Grain Stocks* report, which placed corn stocks estimates on March 1 at 7,401 million bushels and revealed 2nd quarter feed and residual use (figure 2). At 3,821 million bushels, feed and residual use in the first half of the marketing year is 72 percent of the projected 2022/23 total of 5,275 million bushels.

Figure 2

U.S. corn utilization

Billion bushels



Note: 2021/22 is estimated, 2022/23 is projected.

Source: ERS calculations based on USDA World Agricultural Supply and Demand Estimates.

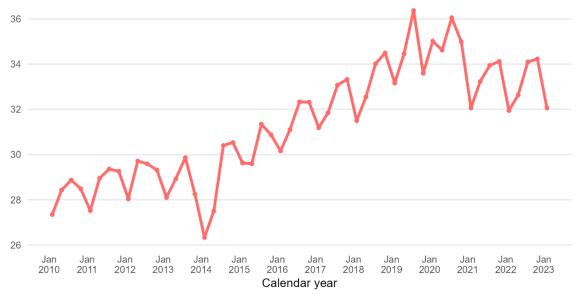
During 2021/22, feed and residual over the first half was 71.6 percent of the total 5,720 million bushels. Feed and residual use during the second half of the marketing year is projected below last year's levels, to reach the current forecast of 5,275 million bushels.

Livestock inventories continue to come down, with grain consuming animal units (GCAU) projected at 99.5 million units in 2022/23, down from 100.1 a year ago. This number reflects an annual increase in the hog sector of 0.1 million units. According to the latest NASS Hogs and Pigs report (released on March 30), the pig crop between December 2022 and February 2023 was 32 million head, which is 0.3 percent higher than the same quarter a year ago but still 8 percent below the pre-pandemic level of January 2020 and down 2 percent from the previous quarter (figure 3).

Figure 3

Quarterly U.S. pig crop inventory

Million head



Note: The data point is located on the final month of the 3-month quarter. Source: USDA, National Agricultural Statistics Service.

Feed and Residual use for the four feed grains (corn, sorghum, barley, and oats) and wheat (on a September-August marketing year basis for 2022/23) is projected at 141 million metric tons, 6.3 million below a year ago.

Corn Acreage Intentions Are Higher for 2023

USDA, NASS's *Prospective Plantings* report indicates corn acreage is up 3.42 million acres from last year to 91.99 million acres, based on Agricultural Survey data collected from February 27 to March 19. Intentions indicated corn area increases across most major producing States in the Corn Belt from last year, with the exceptions of Nebraska at 9.5 million acres (down 100,000) and Wisconsin at 3.95 million acres (no change). The most pronounced increases were in the western Corn Belt and occurred in North Dakota at 3.75 million acres (up 800,000) and Minnesota at 8.35 million acres (up 350,000). North Dakota's large acreage increase comes off of a difficult planting year during 2022 in the region and helps explain the magnitude of the year-over-year expansion. The western Corn Belt increased corn acreage by 1.4 million acres from 2022, despite lower acreage in Nebraska. The eastern Corn Belt increases were led by Illinois at 11 million acres (up 200,000) and Indiana at 5.5 million acres (up 250,000). While these increases are the intentions as of early March, a large snowpack in the

Northern Plains points toward another year with the prospect of extensive flooding that may delay corn planting in some areas. At this early point in the planting season, the planting pace is set near the 5-year average, based on recent crop progress reports from NASS.

Sorghum Stocks Confirm Use Projections

U.S. sorghum use forecast is unchanged at 210 million bushels for 2022/23. Stocks as of March 1 are down 47 percent from a year ago, coming off the drought impacted crop of 2022 (figure 4). NASS estimates that March 1 U.S. sorghum stocks are 109 million bushels. Since the fall, sorghum exports and sales remain sluggish and continue to be far behind last year's pace. Through the first half of the marketing year, the United States has exported 32.6 million bushels of sorghum, far off the previous year's first-half total of 126.53 million bushels. The lack of buying from China is expected to continue and supports the moderate export projection of 90 million bushels. The sorghum market has been led by a surge in sorghum use for ethanol, up 19 million bushels through January to 28.7 million, and increased use captured by feed and residual.

Figure 4

U.S. sorghum inventories, quarterly, on-farm versus off-farm

Million bushels

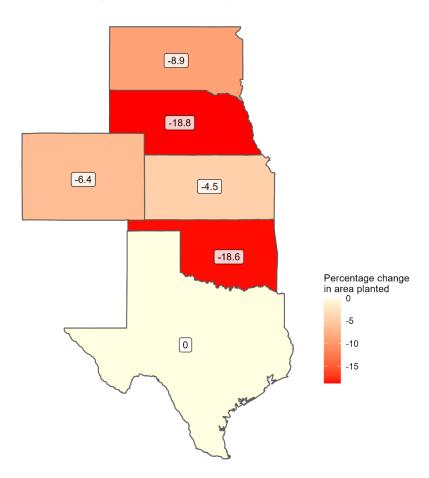
December 1



Intentions Point to Lower Sorghum Acreage

Producers intend to reduce sorghum planted area for 2023 by 6 percent, to 5.98 million acres. Acreage reductions are projected for every State in the survey, except Texas, which showed no change from last year's 1.45 million acres. Kansas at 3.15 million acres (down 150,000), Oklahoma at 350,000 acres (down 80,000), and Nebraska at 260,000 acres (down 60,000) led the way for the year-over-year acreage reduction of 350,000 acres. Kansas and Oklahoma are projected to increase oat and corn acreage, while Nebraska has both higher projected oat acreage and winter wheat acres. If drought conditions in the Southern Plains and Kansas continue, additional sorghum planting may materialize for the 2023 crop season.

Figure 5
2023/24 U.S. sorghum prospective plantings, percent change from 2022/23 by State



Note: Only States with more than 250,000 acres are labeled. Source: USDA, National Agricultural Statistics Service.

Barley Imports and Feed Use Are Projected Higher, Exports Are Down

USDA, NASS reports barley stocks as of March 1 at 88.7 million bushels, placing barley disappearance through the first 3 quarters of the 2022/23 marketing year at 145.4 million bushels. Accordingly, feed and residual use is increased to 40 million bushels, up 5 million bushels from March. A strong pace of imports through the 3rd quarter led to a higher import projection of 19 million bushels, up 3 million from last month. Exports offset the increase in supply with a 2-million-bushel decrease, based on the pace of shipments through the first 3 quarters of the barley marketing year. Projected ending stocks remain the same from the March report at 62.5 million bushels. Average farm prices are increased 5 cents to \$7.35 per bushel, on higher feed and malting barley prices received through February.

Barley Acreage Intentions Are Down Slightly

USDA, NASS's *Prospective Plantings* report shows farmers intend to plant 2.92 million acres of barley in 2023, down slightly from 2.94 million acres last year. The small change in national acreage disguises some State-level shifts, particularly in the top three producing states of Montana, North Dakota, and Idaho. North Dakota intends to plant 610,000 acres in 2023, down 130,000 acres from 2022. Montana acres at 1.09 million (up 60,000) and Idaho area at 590,000 acres (up 30,000) partially offset this drastic drop in North Dakota. Small acreage increases across the United States make up some of the deficit created by lower planting in North Dakota.

Oat Import and Feed Use Are Lowered

U.S. oat supply projections are lowered from the March report, with a 5-million-bushel reduction in imports to 85 million bushels. Imports are dropped on slower pace through the 3rd quarter of the marketing year. USDA, NASS's *Ending Stocks* report placed barley stocks at 42.9 million bushels through the 3rd quarter of the marketing year. Feed and residual use is projected at 60 million bushels, down 5 million bushels from last month, on lower disappearance over the 3rd quarter. Oat disappearance sits at 109.9 million bushels, with 1 quarter remaining. Projected total use is lowered 5 million

bushels to 143 million, resulting in projected ending stocks staying at 32.3 million bushels due to lower supply. Average farm prices are reduced \$4.75 to \$4.65 per bushel, based on weaker monthly prices received by farmers.

Intentions Indicate Higher Oats Area

USDA, NASS's *Prospective Plantings* report indicates that producers intend to plant 2.67 million acres of oats, up 3 percent from 2022. A noteworthy 70,000 acre increase in Iowa oat planting intentions brings the State total to 200,000 acres. Acreage increases in Nebraska (up 15,000), South Dakota (up 50,000), Oklahoma (up 50,000) and Wisconsin (up 35,000) pushed oat intentions higher. Acreage reductions in North Dakota (down 55,000) and Minnesota (down 10,000) provide the prominent offsets to acreage growth in oats in other areas. Oats stocks on March 1 were reported at 42.9 million bushels, down marginally from last year. Based on a Stats Canada's recent estimate, Canada expects 22 percent lower seeded area (2.96 million acres). The first survey of producer intentions by Stats Canada will be released on April 26. The lower expected production out of Canada offsets the potential production increase in U.S. oat production for North American supply in 2023.

International Outlook

Global Coarse Grain Production Prospects Are Down For 2022/23

World 2022/23 coarse grain production is projected 3.3 million metric tons (MMT) lower this month at 1,436.3 million metric tons. The main driver of this month's changes is the reduced forecast for corn production in *Argentina*, the *European Union*, *Serbia*, *Uruguay*, and *Vietnam* that more than offsets an increase in coarse grains production in *Russia* (Map A). There are no changes this month for *U.S.* coarse grain production for 2022/23.

Argentina's corn production prospects for 2022/23 are cut 3 million metric tons this month to 37 MMT, on reduced yields resulting from the intense high temperatures and dry conditions during the critical stages of crop development in the major corn growing areas. Temperatures were warmer than normal for much of March, but conditions have improved week to week, due to rains that resumed in late-March. Yields have been reported lower than expected on the early-corn¹ harvested fields. Corn harvest has started in Argentina, with 10.4 percent of the projected harvested area completed (0.7 million hectares) as of April 4th based on records from Bolsa de Cereales, Buenos Aires.

This month, *Russia's* corn production for 2022/23 is projected 1.8 million tons higher to 15.8 million tons, on increases in both area and yield reported by the Russian Statistical Agency ROSSTAT in its 2022/23 marketing year crop final published statistics report. Similarly, smaller grains (such as oats and millet) are expected to have increased output, mainly on revised higher yields. While these revisions follow final statistics from ROSSTAT, USDA analysis (that includes weather data and satellite imagery) supports these changes.

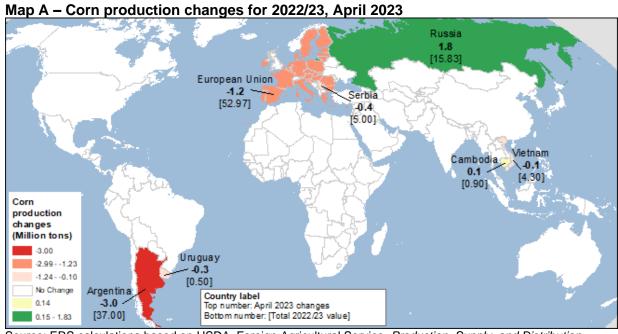
Additional information, details, and specific causes of this month's revisions in coarse grain production are given in tables A1 and A2 below.

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¹ Early planted corn area accounts for 30 percent of the total area planted in Argentina. It is planted during the months of September-October.

	Region or		Change from	YoY							
	country	Production	previous month ¹	Change ²	Comments						
			Million tons								
c	arse grain produ	ction (total)									
	World	1,436.3	-3.3	-67.1							
	Foreign	1,077.8	-3.3	-27.9	Partially offsetting changes are made for a number of countries and commodities. See table A2.						
	United States	358.5	No change	-39.2	See section on U.S. domestic output.						
No	orld production o	production of coarse grains by type of grain									
CORN											
L	World	1,144.5	-3.0	-72.5							
ļ	Foreign	795.8	-3.0	-38.4	Reduced prospects in Argentina, the European Union, Serbia, Uruguay, and Vietnam more than offset increased output in Russian corn crop. See Table A2.						
	United States	348.8	No change	-34.1	See section on U.S. domestic output.						
BARLEY											
1	World	152.0	+0.3	+6.0							
Î	Foreign	148.2	+0.3	+4.8	Higher projected barley output in the European Union more than offsets reduced prospects from Mexico. See table A2.						
	United States	3.8	No change	+1.2	See section on U.S. domestic output.						
	SORGHUM										
ļ	World	57.7	-0.3	-4.3							
ļ	Foreign	52.9	-0.3	+2.3	Reduced sorghum prospects for India and Saudi Arabia more that offset an increase in Yemen. See table A2.						
	United States	4.8	No change	-6.6	See section on U.S. domestic output.						
OATS											
	World	25.8	+0.5	+3.0							
Î	Foreign	24.9	+0.5	+2.8	Higher projected output for Russia. See table A2.						
	United States	0.8	No change	+0.3	See section on U.S. domestic output.						
MIXED GRAIN											
Ļ	World/Foreign	13.9	-0.8	-1.7	Lower projected outout for the European Union. See table A2.						
_h	ange from previous mo	onth. ² YoY: yea	r-over-vear changes. 3	Totals may	not add due to rounding.						

Τá	able A2 - Co	oarse g	rain forei	gn produ	ction for	2022/23 at a glance, April 2023				
	Type of crop	Crop year	Production	Change in forecast ¹	YoY ² change	Comments				
C	oarse grain r	productio		<i>Million tons</i> rv and bv tv	/pe of grain	1				
Coarse grain production by country and by type of grain ARGENTINA										
Ţ	Corn	Mar-Feb	37.0	-3.0	-12.5	Severe dry conditions in key corn-producing regions have contributed to reduced yields and production.				
					RI	JSSIA				
Î	Corn	Oct-Sep	15.8	+1.8	+0.6	Based on final published statistics issued by the Russian Statistical Agency ROSSTAT, with higher area and yield.				
1	Oats	Jul-Jun	4.5	+0.5	+0.8	Based on final published statistics issued by the Russian Statistical Agency ROSSTAT, with higher area and yield.				
EUROPEAN UNION										
 	Corn	Oct-Sep	53.0	-1.2	-18.4	At this point, the changes are a fine-tuning of European crop area and output. This month brings lower projected output in Hungary, Italy, and Bulgaria, among other countries. The decline is partly offset by higher output in Germany and Poland.				
ļ	Mixed Grain	Jul-Jun	13.4	-0.8	-1.7	There are multiple reductions for European mixed grain. Major adjustments are made for Poland, Hungary, Sweden, and a number of other countries.				
1	Barley	Jul-Jun	51.8	+0.3	-0.3	There are multiple partly offseting revisions for European barley this month. Major adjustments are made for Belgium, Denmark, Lithuania, Sweden, and a number of other countries.				
					SE	ERBIA				
I	Corn	Oct-Sep	5.0	-0.4	-1.0	Lower production is due to reduced yields.				
		•			ll l	NDIA				
	Sorghum	Nov-Oct	4.1	-0.3	-0.1	Production is revised lower as a result of a shift away from sorghum area due to higher profitability in cereals such as rice, corn, and wheat.				
URUGUAY										
 	Corn	Apr-Mar	0.5	-0.3	-0.4	Uruguayan corn production is revised down on lower area and reduced yields. Drought and high temperatures during the growing season contributed to poor crop quality.				
					CAN	IBODIA				
Î	Corn	Jul-Jun	0.9	+0.1	Fractional	According to the Ministry of Agriculture, Forestry and Fisheries (MAFF), there is an increase in corn area caused by higher prices of corn due to low supply resulted from Russia-Ukraine conflict.				
	VIETNAM									
ļ	Corn	May-Apr	4.3	-0.1	-0.1	Vietnamese corn production is revised down on lower area. Steep competition from low cost imported corn has trigered farmers to shift to more profitable cash crops such as fruits, coffee and peppers.				
	MEXICO									
1	Barley	Jul-Jun	0.9	-0.1	-0.2	The reduction is based on official data indicating lower area and yields.				
				7	SAUD	I ARABIA				
1	Sorghum	Jul-Jun	0.1	-0.1		Sorghum prospects are reduced due to both lower area and yields.				
	0		0.0			EMEN				
	Sorghum	Oct-Sep	0.2	+0.1		Sorghum prospects are improved due to higher yields.				
						Crop year				
	Corn	1.1.1	2.0	.05	,	LDOVA				
	Corn	Jul-Jun	2.8	+0.5	+2.0	Revisions are based on higher area and yields. EAN UNION				
1	Corn	Oct-Sep	71.4	+0.4	+3.9	Higher production is reported by France, Hungary, Portugal among other countries.				
	Change from previous month. Smaller changes are made for several countries, see map A for changes in <i>corn</i> . YoY: year-over-year changes.									
Sou	Source: ERS calculations based on USDA, Foreign Agricultural Service, Production, Supply and Distribution database.									



Source: ERS calculations based on USDA, Foreign Agricultural Service, *Production, Supply, and Distribution* database.

Global Corn Exports Are Balanced Out Between Argentina and Ukraine

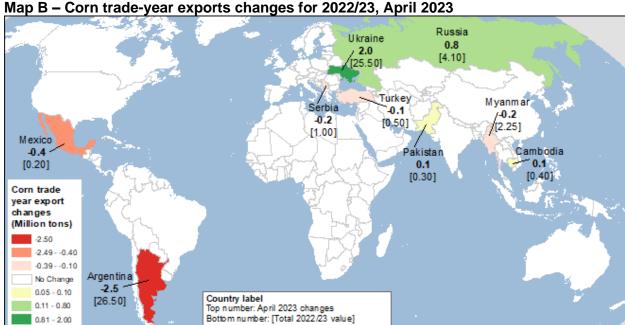
Global coarse grain trade is revised 0.5 million metric tons lower this month to 219.2 million metric tons for the October-September international trade year 2022/23.

Among major global exporters, *Argentina* sees the largest reduction in corn exports this month. Corn exports from *Argentina* are lowered by 2.5 million metric tons to 26.5 million for the 2022/23 trade year, as a result of lower corn production. Increased domestic use for *Mexico*, combined with a 50-percent tariff on corn exports through June 2023, have resulted in a reduction in Mexican corn exports of 0.4 million.

Burmese and **Serbian** corn exports are each revised 0.2 million metric tons lower. These reductions are partially offset by a 2.0-million-ton increase in **Ukrainian** exports, which were revised higher based upon higher corn export data for March, and a 0.8-million-ton increase in **Russian** corn exports. The United Nations-vessel movements data suggest that China and the European Union were the primary export destinations for Ukrainian corn during March.

The changes in corn exports projections and the current trade data impact import forecasts for several importing countries. *Egypt* sees the largest reduction in corn

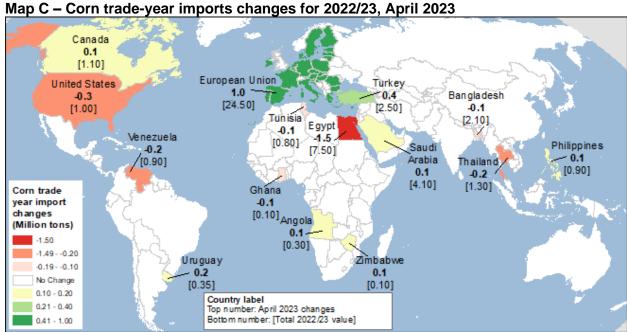
imports this month, down 1.5 million tons for 2022/23. This reduction results from weak demand from the poultry sector, inflation, and a lack of foreign currency reserves. For the *United States*, corn imports are revised down 0.3 million metric tons, based on a slow import pace, while *Venezuela* and *Thailand* each see reductions of 0.2 million metric tons. The projection for the *European Union's* corn imports is revised 1.0 million metric tons higher this month—with *Ukraine* as a major source, followed by *Brazil*. Corn imports are also projected higher for *Turkey* and *Uruguay* by 0.4 and 0.2 million metric tons, respectively. Numerous other countries saw fractional changes in corn trade this month. For a visual display of the changes in corn trade, see maps B and C below.



Source: ERS calculations based on USDA, Foreign Agricultural Service, *Production, Supply, and Distribution* database.

Several offsetting changes are made for barley trade for 2022/23. Increases in barley imports from *Jordan* and the *European Union* (up 0.3 and 0.2 million metric tons, respectively) are offset by declines of 0.4 million tons for *Saudi Arabia* and 0.1 million tons for the *United Arab Emirates*. Fractional increases in imports from *India*, *Kazakhstan*, and the *United States* are partially offset by decreases for *Oman*, *Morocco*, *Egypt*, and *Algeria*. On the barley export side, *Canadian* exports are up 0.1 million metric tons, while exports from the *United Kingdom* are down 0.2 million metric tons. Fractional changes are also made to barley exports from the *United States* and

United Arab Emirates, which leave total global exports down 0.1 million metric tons from a month ago.



Source: ERS calculations based on USDA, Foreign Agricultural Service, *Production, Supply, and Distribution* database.

Changes to sorghum trade for 2022/23 are fractional.

Global Coarse Grain Use and Stocks Are Projected Lower

Global coarse grain use forecast for 2022/23 is projected down 1.7 million metric tons this month to 1,448.4 million.

Global corn use for 2022/23 is down 0.7 million metric tons this month, with the largest change being a 1.5-million-ton reduction in *Egyptian* corn feed use, due to feed supply shortages that have caused a portion of poultry producers to halt production.

Reductions of 0.2 million metric tons were also made for domestic corn consumption for *Venezuela* and *Thailand*. These reductions are partially offset by a 0.8-million-ton increase in *Russian* corn use, a 0.6-million-ton increase in *Mexican* corn use, and a 0.5-million-ton increase in *Turkey's* corn use.

Despite lower global corn use and higher beginning stocks, reduced production has left ending stocks 1.1 million metric tons lower. *Ukraine* sees the largest reduction in

ending stocks, which are 1.0 million metric tons lower. This reduction is followed by the *European Union* (with a reduction of just over 0.2 million metric tons), *Serbia* and *Mexico* (each with a 0.2-million-ton reductions in stocks for 2022/23). These decreases in ending stocks are partially offset by increases for *Russia*, *Brazil*, and *Angola*. See Map D for more details.

Global sorghum use for 2022/23 is also reduced this month, down 0.3 million tons to 58.4 million. *India* sees the largest revision in domestic sorghum consumption (which is down 0.3 million metric tons, as a result of lower production)—while the *European Union, Saudi Arabia*, and *Yemen* each see fractional changes.

Several country-level revisions to 2022/23 barley consumption are made this month, resulting in a net total 0.2 million metric ton reduction. The *European Union* sees the largest change in barley use (with an increase of 0.7 million metric tons), while *U.S.* consumption is increased by 0.1 million metric tons. These increases are more than offset by reductions of 0.4 million metric tons for *Saudi Arabia* and 0.1 million metric tons each for *Australia*, *Canada*, and the *United Arab Emirates*. Smaller revisions are made for several other countries this month.

Global barley ending stocks for 2022/23 are revised 0.6 million metric tons higher for the month of April. The largest revisions are for *Jordan* and the *United Kingdom*—each 0.2 million tons higher this month—while *Australia's* ending stocks are revised 0.1 million metric tons higher. Smaller increases are also made to the ending stocks estimates for the *European Union*, *India*, *Kazakhstan*, *Moldova*, *Peru*, and *Saudi Arabia*—and fractional decreases are made for *Japan*, *Mexico*, and *Tunisia*.



Source: ERS calculations based on USDA, Foreign Agricultural Service, *Production, Supply, and Distribution* database.

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